



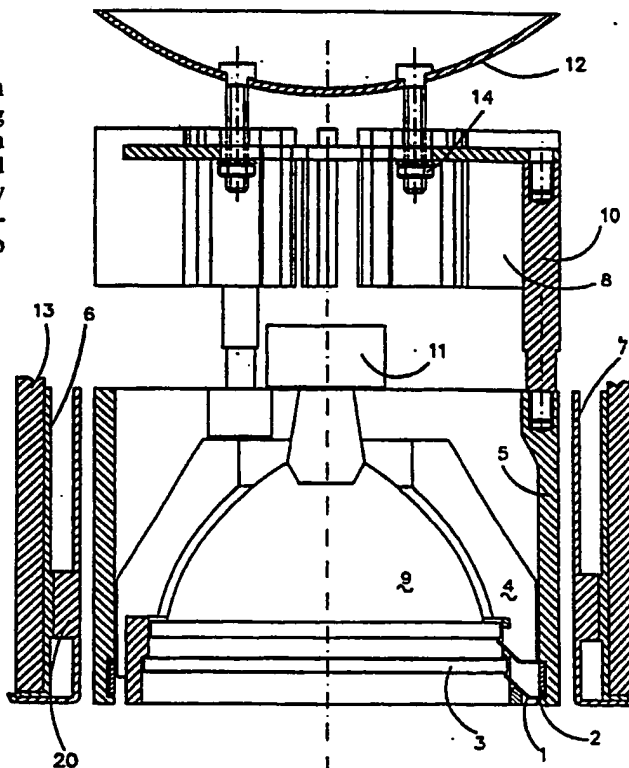
## INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

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| <b>(51) International Patent Classification <sup>5</sup> :</b><br><br><b>F21V 21/04, 29/00</b>  | <b>A1</b> | <b>(11) International Publication Number:</b> <b>WO 92/05389</b><br><br><b>(43) International Publication Date:</b> <b>2 April 1992 (02.04.92)</b>   |
| <b>(21) International Application Number:</b> PCT/IT91/00076<br><b>(22) International Filing Date:</b> 17 September 1991 (17.09.91)<br><b>(30) Priority data:</b><br>35994 B/90                      19 September 1990 (19.09.90) IT<br><b>(71) Applicant (for all designated States except US):</b> PROFILI S.P.A. ILLUMINAZIONE [IT/IT]; Via Pontina, km 28.800, I-00040 Pomezia (IT).<br><b>(72) Inventor; and</b><br><b>(75) Inventor/Applicant (for US only) :</b> MANZONI, Luigi [IT/IT]; Via del Lauro, 3, I-20100 Milano (IT).<br><b>(74) Agent:</b> PERROTTA, Luciana; C.so Vittorio Emanuele II, 21, I-00186 Roma (IT). |           | <b>(81) Designated States:</b> AT (European patent), BE (European patent), CA, CH (European patent), DE (European patent), DK (European patent), ES (European patent), FR (European patent), GB (European patent), GR (European patent), IT (European patent), JP (Utility model), LU (European patent), NL (European patent), SE (European patent), US.<br><br><b>Published</b><br><i>With international search report.</i> |

**(54) Title:** FIXED BUILT-IN LIGHTING FIXTURE WITH SPECIAL FALSE CEILING LOCK, FASTENING OF THE LAMP, OF THE PROTECTIVE GLASS, AND SPECIAL COOLING SYSTEM

**(57) Abstract**

A fixed built-in lighting fixture is described which comprises a heatsink (8) mounted above a tubular casing (5) which surrounds the lamp holder (4), an expansion locking device (6, 7) to permanently fasten rapidly and without tools said tubular casing in the mounting cavity (13), and means (1, 2) for snap-assembling and -disassembling the lamp (9) and protective glass (3) from the lamp holder.



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<sup>+</sup> Any designation of "SU" has effect in the Russian Federation. It is not yet known whether any such designation has effect in other States of the former Soviet Union.

FIXED BUILT-IN LIGHTING FIXTURE WITH SPECIAL FALSE CEILING LOCK, FASTENING OF THE LAMP, OF THE PROTECTIVE GLASS, AND SPECIAL COOLING SYSTEM.

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5 This invention regards a fixed built-in lighting fixture equipped with a special device locking it to the false ceiling and with a heatsink of new design, as well as numerous other characteristics already described in the patent application no. 48285A/90 made by the same applicant,  
10 which forms an integral part of this description.

To fasten built-in lighting fixtures to a false ceiling, current use provides for steel springs or hooks which do not permit a perfect lock, precisely because of their elasticity. In fact, because of the weight of the  
15 fixture and the vibrations which may occur, the springs stretch and the fixtures no longer adhere perfectly to the false ceiling. It is obvious that this type of installation, since it does not guarantee stability, is completely inadvisable in some cases, for example in areas with a high  
20 earthquake risk.

Another problem unsolved by current built-in fixtures is that regarding a correct dissipation of the heat produced. In many cases this leads to the damaging of the false ceiling after a certain period of time after installa-  
25 tion.

The job of this model is to remedy the above-mentioned problems by means of a built-in fixture equipped with an effective and rapidly expanding locking device and with a heatsink which guarantees a correct dispersion of the  
30 heat in the various directions.

The model is illustrated in the enclosed drawings in which:

Figure 1 is a plan view from above of the built-in fixture, with some parts removed for greater clarity;

35 Figure 2 is a cutaway view as per the A-A plane of Figure 1;

Figure 3 is a plan view from above of the cylindrical shell in which the lamp holder is mounted and on which the heatsink is fastened;

40 Figure 4 is an elevation of the same shell which

shows the groove for the bayonet joint on the first internal ring of the locking device;

Figure 5 is a plan view from above of the above-said first ring;

5           Figure 6 is a plan view from above of the split ring, concentric to the previous one, meant to adhere to the surface of the mounting cavity.

          With reference to the figures, the built-in lighting fixture described substantially comprises a heatsink (8) made up of a hollow metal body, of a substantially cylindrical form, internally and externally equipped with numerous fins (9) alternating with grooves (11), which increase its heat-exchange surface. The heatsink (8) is fastened by means of a certain number of vertical spacers (10) to a lower tubular casing or shell (5), also metal, where the lamp holder is mounted (4), while it is topped with a cap (12), also metal, which is screwed, to an adjustable height, with the concave side upward, by means of bolts (14).

20           The entire unit comprising the heatsink (8) and the shell (5) with the lamp holder (4), lamp (9), and protective glass (3), is installed in the cavity (13) with the aid of a sleeve (7) and a concentric split ring (6).

25           The shell (5) is bayonet-jointed inside the sleeve (7), guiding in the grooves (16) on its outer wall the pins (18) of the sleeve itself. The locking in place comes about due to the expansion of the split ring (6) after rotation of the sleeve (7). This movement, in fact, leads the ribs (20) of the sleeve and (22) of the ring (6), formed with sloping surfaces, to slide and geometrically mate, for which reason the ring widens, adhering to the walls of the cavity (13) of the false ceiling.

30           The lamp (9) and the protective glass (3) are held in their places inside the lamp holder (4) by a certain number of clips (1), held by an elastic band (2), which are disengaged by simply applying pressure to the lower rim of the lamp holder itself, as per a mechanism described in the patent application no. 48285A/90, which may be referred to for the sake of brevity.

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## CLAIMS

- 1) Fixed built-in lighting fixture characterized by the fact that it comprises a heatsink fastened above a tubular casing which surrounds the lamp holder, an expanding locking device suitable for fastening rapidly and permanently said tubular casing in the mounting cavity, and means for the rapid and tool-free assembly and disassembly of the lamp and protective glass in the lamp holder.
- 2) Lighting fixture as per the previous claim, characterized by the fact that the heatsink is composed of a hollow metal body, finned and grooved on both the inner and outer surfaces, which is fastened by means of vertical spacers at the top of the tubular casing which surrounds the lamp holder.
- 3) Lighting fixture as per the previous claims, characterized by the fact that the distance between the heatsink and the casing is sufficient for the placement of the electrical connectors of the lamp mounted in the lamp holder.
- 4) Lighting fixture as per the previous claims, characterized by the fact that the heatsink is topped, at a distance which may be adjusted by means of bolts or the like, by a spherical cap with the concave side turned upward.
- 5) Lighting fixture as per the previous claims, characterized by the fact that the tubular casing of the lamp holder is bayonet-jointed to the inside of a concentric sleeve furnished on the outside with sloped surfaces.
- 6) Lighting fixture as per the previous claims, characterized by the fact that the locking of the mounting cavity is achieved by the widening of a split ring concentric to said sleeve, following rotation of the sleeve itself.
- 7) Lighting fixture as per the previous claims, characterized by the fact that said ring is provided with sloping surfaces which mate geometrically with those on the sleeve, during rotation of the latter.
- 8) Lighting fixture as per the previous claims, characterized by the fact that the lamp and protective glass are held in place inside the lamp holder by the extremities of a certain number of clips which, protruding from special holes of the base ring of the lamp holder itself, act as blocking elements and are disengaged by pressing slightly on the lamp

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holder, just enough to make the extremities of the clips bend toward its walls.

- 9) Lighting fixture as per the previous claims, characterized by the fact that said lamp holder is shaped in such a way that it has, starting from the circular base ring, numerous ribs or segments distributed radially, separated by wide cuts which define a domed space which is open above to permit the fastening of the lamp to the electrical connectors.
- 10) Fixed built-in lighting fixture as substantially described and illustrated in the enclosed drawings.

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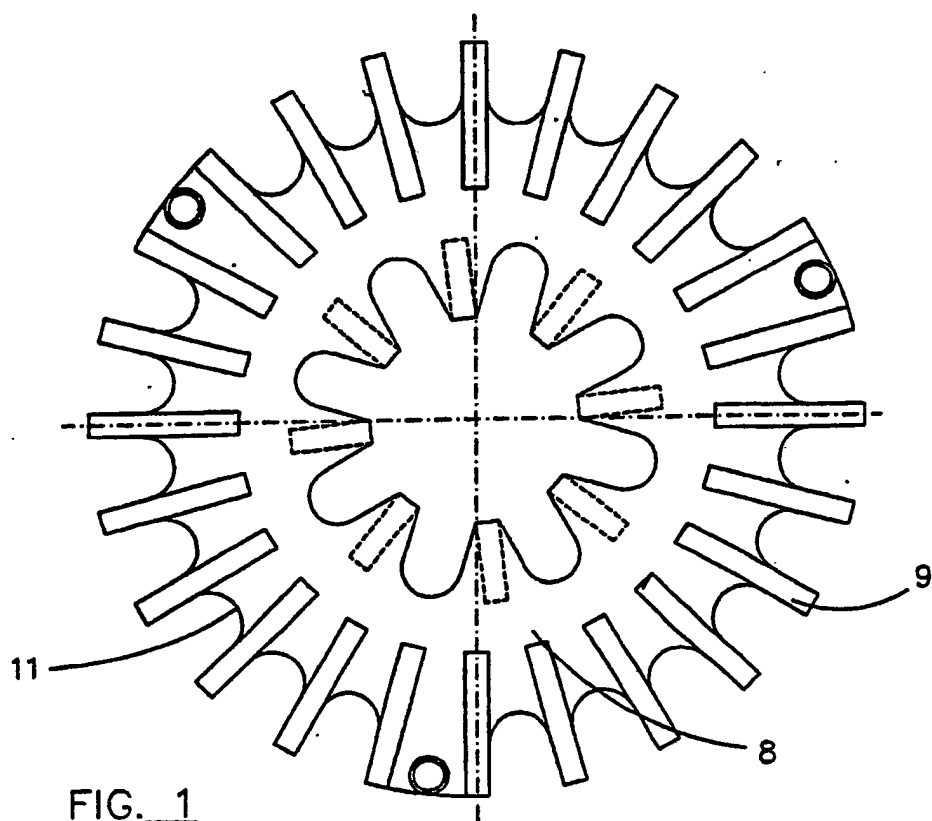


FIG. 1

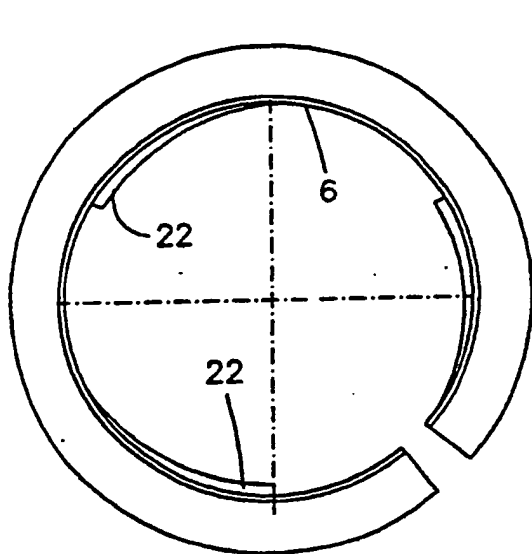


FIG. 6

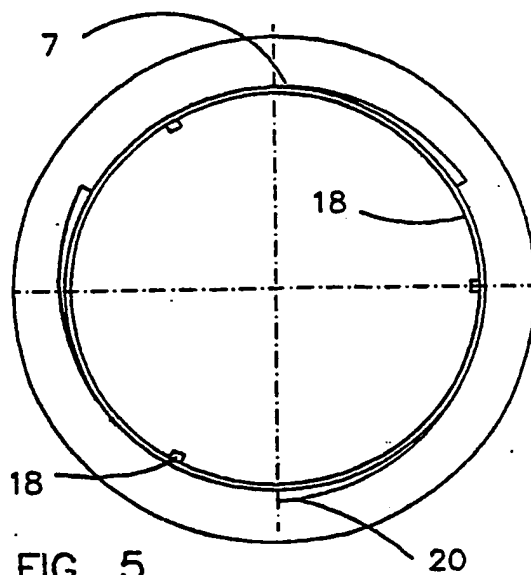


FIG. 5

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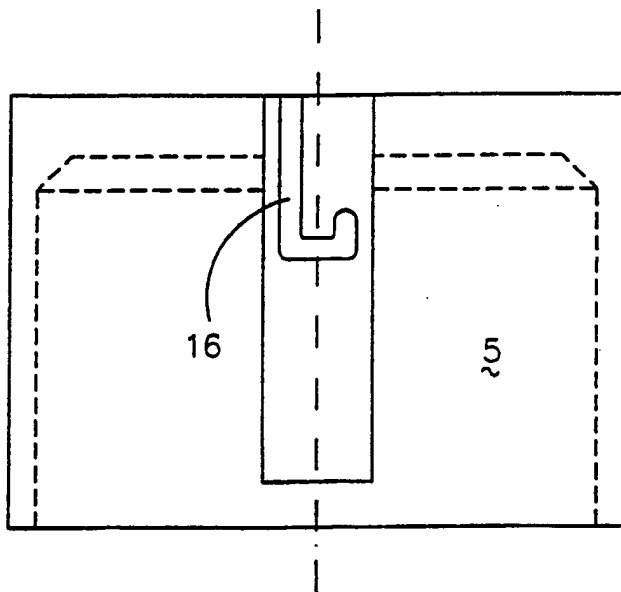


FIG. 4

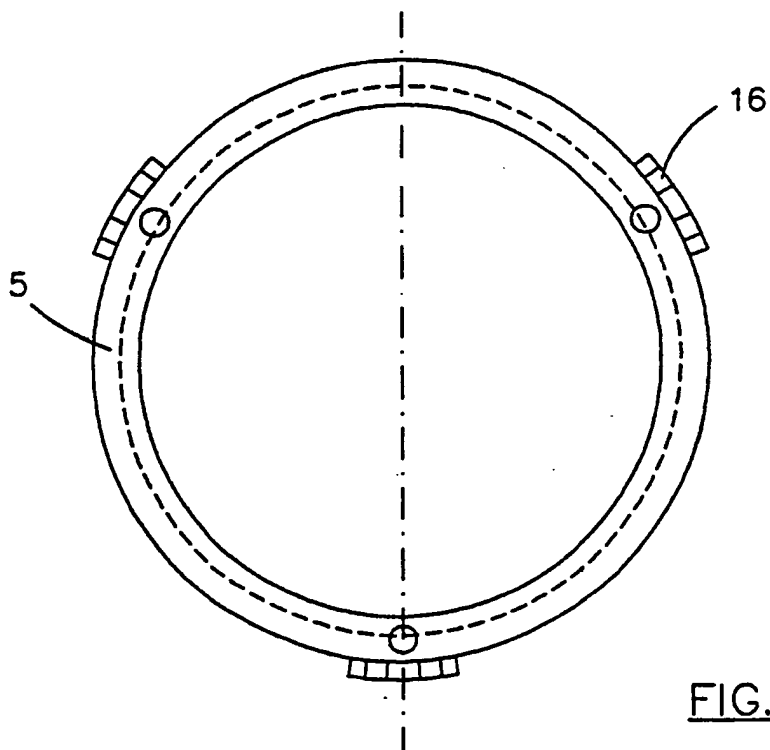
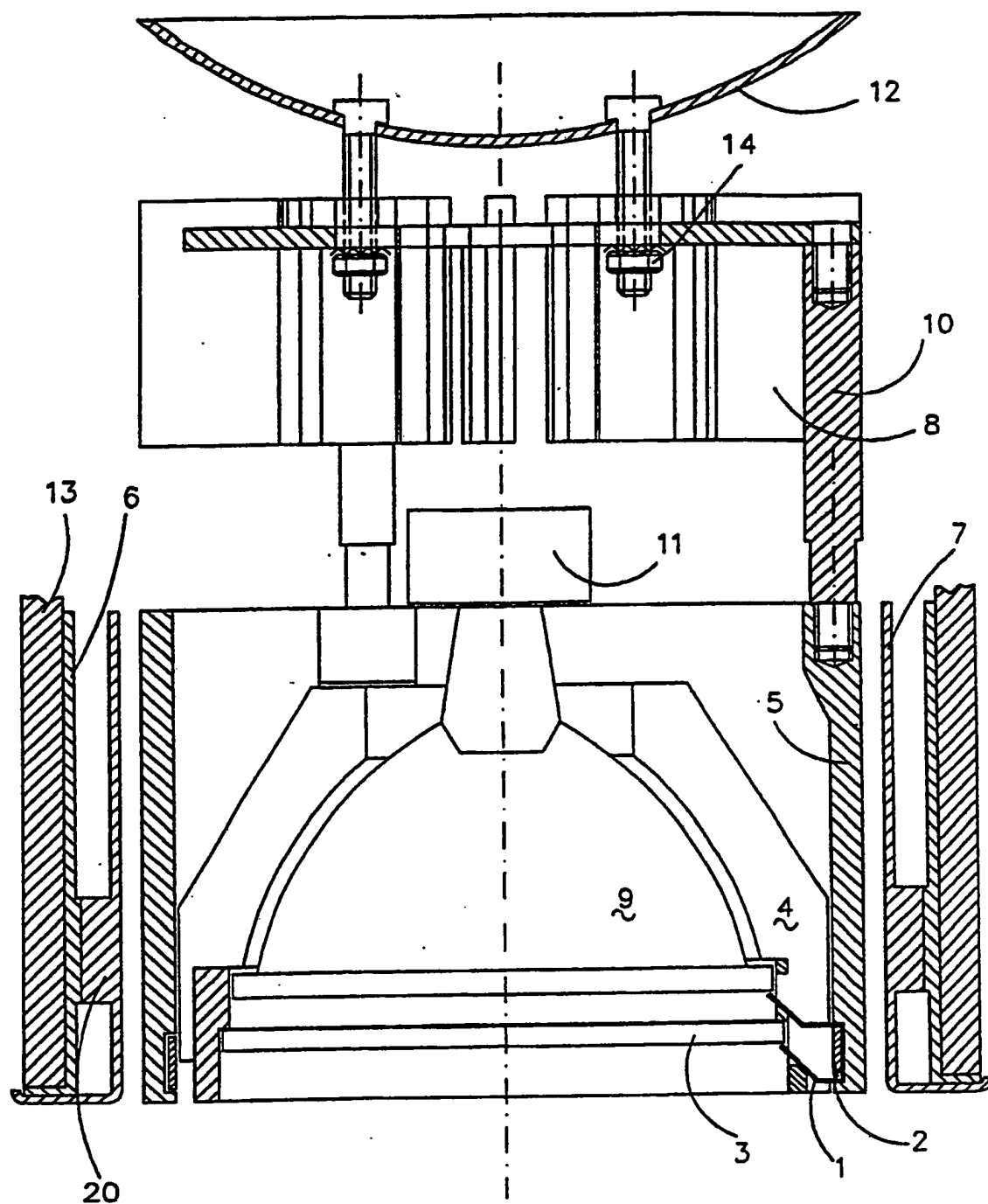


FIG. 3




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## INTERNATIONAL SEARCH REPORT

PCT/IT 91/00076

International Application No. \_\_\_\_\_

|   |   |                                     |
|---|---|-------------------------------------|
| <b>I. CLASSIFICATION OF SUBJECT MATTER</b> (If several classification symbols apply, indicate all) <sup>6</sup>   |   |                                     |
| According to International Patent Classification (IPC) or to both National Classification and IPC   |   |                                     |
| Int.Cl. 5 F21V21/04; F21V29/00  |   |                                     |
| <b>II. FIELDS SEARCHED</b>  |   |                                     |
| Minimum Documentation Searched <sup>7</sup>   |   |                                     |
| Classification System   | Classification Symbols  |                                     |
| Int.Cl. 5   | F21V  |                                     |
| Documentation Searched other than Minimum Documentation to the extent that such Documents are included in the Fields Searched <sup>8</sup>  |   |                                     |
| <b>III. DOCUMENTS CONSIDERED TO BE RELEVANT<sup>9</sup></b>   |   |                                     |
| Category <sup>10</sup>  | Citation of Document, <sup>11</sup> with indication, where appropriate, of the relevant passages <sup>12</sup>                      | Relevant to Claim No. <sup>13</sup> |
| Y   | EP,A,0 233 465 (HOUPAIN) 26 August 1987<br>see column 2, line 37 - column 3, line 34;<br>figures 1-5                                | 1                                   |
| Y   | EP,A,0 350 522 (LIGHTING TECHNOLOGY INCORPORATED)<br>17 January 1990<br>see column 15, line 52 - column 16, line 27;<br>figures 6,7 | 1                                   |
| A   |   | 2                                   |
| A   | DE,U,9 002 879 (NAFA-LIGHT KURT MAURER) 17 May 1990<br>see claim 1; figure 1  | 1,4                                 |
| A   | EP,A,0 241 762 (CEAG LICHT- UND STROMVERSORGUNGSTECHNIK GMBH) 21 October 1987<br>see claims 1,2; figure 4                           | 1                                   |
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| <b>IV. CERTIFICATION</b>  |   |                                     |
| Date of the Actual Completion of the International Search   | Date of Mailing of this International Search Report   |                                     |
| 19 DECEMBER 1991  | 7. 01. 92   |                                     |
| International Searching Authority   | Signature of Authorized Officer   |                                     |
| EUROPEAN PATENT OFFICE  | MARTIN C.P.A.                                  |                                     |

**ANNEX TO THE INTERNATIONAL SEARCH REPORT  
ON INTERNATIONAL PATENT APPLICATION NO. IT 9100076  
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| Patent document<br>cited in search report | Publication<br>date | Patent family<br>member(s)     | Publication<br>date  |
|---|---------------------|--------------------------------|----------------------|
| EP-A-0233465                              | 26-08-87            | FR-A- 2593268<br>FR-A- 2610699 | 24-07-87<br>12-08-88 |
| EP-A-0350522                              | 17-01-90            | US-A- 4780799<br>US-A- 4841422 | 25-10-88<br>20-06-89 |
| DE-U-9002879                              | 17-05-90            | None                           |                      |
| EP-A-0241762                              | 21-10-87            | DE-A- 3611499                  | 15-10-87             |